

No. 9.—*Novitates cubanae*

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INTRODUCTION

The senior author is at this point inclined to be a bit reminiscent. It was, he believes, Doctor C. T. Ramsden who first stoutly protested at the arrangement of the species of *Eleutherodactylus* which the senior author preferred for use in the *Herpetology of Cuba*, published in the *Memoirs of the Museum of Comparative Zoölogy* in 1919, and it is a tribute to his innate courtesy that he finally acquiesced to an arrangement in which he was strongly disinclined to believe. The views which the senior held during the early years of his work on West Indian Amphibia were perhaps unconsciously prejudiced by the work of predecessors and by a sort of innate feeling that there could not, by any probability, be so many members of a single genus on islands of the size of the Greater Antilles. How extraordinarily incorrect his belief was, is shown by the enormous number of forms which have been and are still being discovered. Some, probably not very many, will fall as synonyms, others, probably a great many, will ultimately be recognized as geographic races rather than as "full species" when much more collecting and much more field observing has been done.

Many more hills and mountains remain to be intensively searched, particularly in Cuba and San Domingo; and in Cuba there are large areas of the central portion of the Island between the eastern border of the Province of Santa Clara and the mountains of Oriente, which may be expected to provide the information necessary to indicate the relationship and to produce intergrades between forms now known in the eastern and western parts of the Island. Whether there are hills high enough to shelter forms relating to those found in the higher parts of the mountains of Santa Clara and of Oriente may perhaps be doubtful, but a good many of the lowland species will probably best be designated by trinominals after more collections come in from this little known region.

As in the case of the Bahamas, so also in Cuba, it is an unhappy fact that intensive collecting has been so long delayed. The changes which man has wrought over vast areas once high forest and now cattle pastures or cane fields make it uncertain whether we shall ever know as much as might have been learned had intensive collecting been carried

on a hundred years ago. So also is it equally certain that the attempts to monograph the faunas of the several islands were made too soon and innumerable published additions have been necessary to keep those who are interested informed of the constantly changing status of our knowledge of the animal life of the region. Here the senior author again has been seriously to blame. It is his hope, however, before long to bring out another check list of the reptiles and amphibians of the whole Antillean area, using trinominals where they have not been used before in an effort to indicate the particular relationships which are most conveniently expressed in this way but realizing at the same time that, in many cases, such use is inconsistent with the thesis that forms on separate islands, intergradation with geographic juxtaposition being impossible, are really species, zoologically speaking, and not subspecies in the sense in which the word is properly used. One hesitates to use the same method of designation for these island forms as one uses for geographic races on the continents or on the large islands where races which intergrade are found either in mountains and adjacent lowlands or in adjacent areas with regions of intergradations between them. It is not the inconsistency which is unpleasing but, rather, that the same method of designation is being used for two essentially different catagories.

The races described in this paper are forms which definitely have relationships within the Island of Cuba and hence these trinominals are bestowed with a clear conscience.

CELESTUS DELASAGRA NIGROPUNCTATA subsp. nov.

Plate 1

Type. M. C. Z. No. 42504 an adult female from the mountains north of Imias, about 3000 feet altitude, Oriente, Cuba, collected by P. J. Darlington, July 28, 1936.

Paratypes. M. C. Z. No. 7426 from Eastern Cuba, an old and somewhat faded individual with no further data or history; M. C. Z. No. 42563 from Cuchillo de Guajimero, about 2000 feet, Oriente, Cuba, and M. C. Z. No. 42506 from El Yunque de Baracoa, 1000-1800 feet, Oriente, Cuba both collected by P. J. Darlington, July 1936.

Diagnosis. Essentially similar to typical *delasagra* but differing in coloration (in alcohol). The back is rather black or very dark brown, especially anteriorly; there are very dark spots each often accompanied with a whitish one; the lateral band is black (dark brown in No. 7426) anteriorly this is broad, posteriorly it breaks up into black or dark

brown spots, extending on to tail, each is bordered above posteriorly by a narrow dark line in two of the paratypes; whitish spots on the lateral band tend to arrange themselves in vertical rows. The whitish spots are only distinct on anterior portion of this band in the paratypes. In paratype No. 42506 the dark lateral band is not present posteriorly its place being taken by a light gray area which does not extend on to the tail; in other respects the coloration is similar to that of typical *delasagra*.

Measurements.

Type No.		Length Head and Body	Tail	Total Length	Hind Limb	Hind Foot
42504		111 mm.	143 mm.	254 mm.	19 mm.	9 mm.
Paratypes	7426	93 mm.			18 mm.	8 mm.
	42506	92 mm.	56 mm.	148 mm.	18 mm.	8 mm.
	42563	107 mm.	82 mm.	189 mm.	22 mm.	10 mm.

The tail of No. 7426 is broken. The tails of Nos. 42506 and 42563 are regenerated.

Remarks. More material may show that No. 42506 actually represents still another unrecognized race.

Dr. Darlington supplies the following field notes concerning the type (No. 42504). "It was curled around and among four eggs under a chunk of rotten wood about three feet by one foot and six inches thick which was lying rather loosely on the ground in a field close to the edge of woods at about 3000 feet elevation. I was told by children who showed me the nest that the lizard had been there for several days."

Two of the four eggs mentioned above were preserved and are now in the Museum of Comparative Zoölogy.

SMINTHILLUS LIMBATUS ORIENTALIS subsp. nov.

Plate 2, fig. 1.

Type. M. C. Z. No. 22082 a female? from El Yunque de Baracoa, 1000-1800 feet, Oriente, Cuba, collected by P. J. Darlington, July 13-14, 1936.

Paratypes. M. C. Z. Nos. 22083-9 and two uncatalogued specimens with the same data and history as the type.

Diagnosis. Essentially similar to typical *limbatus* (Plate 2, fig. 2.) but differing in coloration (in alcohol). Back spotted with black or very dark brown, posteriorly especially; always a small dark shaped mark, or a dark spot in some paratypes, in the middle of back just in

front of the line of insertion of the fore limbs. These are preceded by two small dark dots (absent in one paratype); the white dorso-lateral streaks are prominently margined with black on their inner edges, except very anteriorly; dorso-lateral white streaks slightly converge and then slightly diverge anteriorly (little evidence of this in some paratypes); rear of femur marked with black (note that the black markings in the large specimens are dark brown in a juvenile). Otherwise the coloration is similar to that of typical *limbatus*. In *limbatus* the dorsal ground color is usually darker and the white streaks usually narrower than in *orientalis*.

Measurements.

	<i>Length Head and Body</i>	<i>Head</i>	<i>Hind Limb</i>	<i>4th Toe</i>
Type No. 22082	13 mm.	5 mm.	18 mm.	3 mm.
Paratypes 22083-9 and two uncatalogued specimens.	12-8 mm.	5-3 mm.	18-12 mm.	4-2 mm.

The figures show the difference of these two races. The typical form is much more richly colored, more maroon than the Baracoa race. The senior author is not wholly convinced that the genus *Sminthillus* is worth recognizing. The name, however, is preferred by the junior author, who may be entirely correct in his stand.

ELEUTHERODACTYLUS TURQUINENSIS sp. nov.

Plate 3, fig. 1.

Type. M. C. Z. No. 21975, a female, from near Cueva del Aura, Turquino Peak, 1500-4000 feet, Oriente, Cuba, collected by P. J. Darlington, June 1936.

Paratypes. M. C. Z. Nos. 21976-21984 and twenty-two uncatalogued specimens all with the same data and history.

Diagnosis. Closely allied to *Eleutherodactylus sierramaestrae* and *E. brevipalmatus*, if these are entitled to separate recognition. It differs from both in possessing decidedly more webbing on the feet, a smoother dorsum, which is subject, of course, to the influence of preservation, and usually more rounded less truncate digital disks.

Description. Tongue suboval, slightly nicked behind (not nicked in some paratypes); vomerine teeth in two fairly long, slightly curved groups behind the choanae (straight in some paratypes), extending not quite so far as the outer edges of the choanae (extending about as far in some paratypes); snout subacuminate, slightly longer than the diameter of the eye (as long as diameter of eye in some paratypes);

loreal region concave, somewhat oblique; nostril nearer tip of snout than eye; interorbital space slightly broader than upper eyelid (interorbital space slightly narrower or about the same as the upper eyelid in most paratypes); tympanum distinct, one half the diameter of the eye (a bit less than one half to about three quarters in the paratypes); digital disks large, rounded or slightly pointed on the ends; disk of third finger almost as large as tympanum (as large as to about a quarter as large in the paratypes); first finger shorter than second; first toe much shorter than second; toes webbed at base, the web extending up the side of each digit as a *distinct dermal margin*; two metatarsal tubercles; the tibio-tarsal articulation of the adpressed hind limb reaches to just in front of the eye (reaches just in front of the eye to just behind it in the paratypes); slightly warty above, middle of back smooth (middle of back slightly warty in some paratypes); smooth below, granular on sides of belly.

Coloration in alcohol. Above, black or purplish brown, lips gray posteriorly with dark streaks radiating from the eye to the edge of the lip; limbs crossbanded with darker, also a darker crossband between the eyes; crossbands rather indistinct owing to the darkness of the ground color; ground color of femur lighter, with the crossbands more clearly evident; below, whitish, powdered and sparsely spotted with dark brown.

Ground color of upper surface of paratypes like that of type varying to light gray, the crossbands being more plainly evident in the lighter colored individuals. There is also a chevron-shaped dark marking on the anterior part of the dorsum of the lighter specimens. The upper surface of the head in some examples is lighter than the dorsum; also the labial streaks are sometimes obsolete. In one paratype, a light dorso-lateral band is present on each side from the upper eyelid almost to the hind limb. Beneath the paratypes are similar to the type, or more or less heavily marked with a darker shade.

Measurements.

	<i>Length Head and Body</i>	<i>Head</i>	<i>Hind Limb</i>	<i>4th Toe</i>
Type No. 21975	53 mm.	19 mm.	83 mm.	16 mm.
Paratypes 21976-84	45-16 mm.	12-6 mm.	73-23 mm.	12-4 mm.

twenty-two uncatalogued specimens.

Remarks. Dr. Darlington reports that this species was found clinging to rocks in mountain streams and that he did not find it associated with any other habitat. He tells us that *E. sierra-maestrae* and *E. brevipalmatus* were often found on the banks of these streams,

but would take to the water if alarmed. Although similar mountain streams are to be found on other Cuban peaks, no form corresponding to *turquinensis* has been found in them. Darlington did consider that *sierra-macstrae* and *brevipalmatus* in the Cobre range were rather more aquatic than on Turquino Peak. He adds also that the new frog occurred in the tributaries of the Rio Potrerillo (1000 to 3000 feet) up to Rio Cabrera (probably above 3000 feet). It was not found at the mouth of Rio Potrerillo nor at mouth of Rio Turquino near sea level, none in the upper reaches of Rio Turquino at 4000 to 5000 feet, although the stream looked perfectly suitable and was of the same size as streams in which the frog did occur.

ELEUTHERODACTYLUS ATKINSI ORIENTALIS subsp. nov.

Plate 3, fig. 2.

Type. M. C. Z. No. 22158 a gravid female from Upper Ovando River, 1000-1200 feet, Oriente, Cuba, collected by P. J. Darlington, July 1936.

Paratypes. M. C. Z. No. 22159 with the same data and history as the type; M. C. Z. Nos. 3882 and 4073 from La Patana near Baracoa collected by V. J. Rodriguez, no date; M. C. Z. Nos. 22092-8 frp, Cape Maisi, July 15-16, 1936; M. C. Z. Nos. 22101-3 from Mountains North of Imias, 3000-4000 feet, July 25-28, 1936; M. C. Z. Nos. 22070-4 and two uncatalogued specimens from El Yunque de Baracoa 1000-1800 feet, July 13-14, 1936. All the localities are in the Province of Oriente, Cuba. All paratypes were collected by P. J. Darlington unless otherwise mentioned.

Diagnosis. Preserved in alcohol this form is essentially similar in alcohol to the typical *atkinsi* but it differs in possessing no conspicuous black spot or spots on the upper side of the femur near its base; only rarely in a few paratypes are a few very small black spots to be found on the rear of the femur or on its anterior side near the base. The light dorso-lateral light streaks in this new form start at the rear of the upper eyelid, whereas in typical *atkinsi* they usually start further down on the back, or may be wholly absent; also the dorso-lateral streaks are wider and more distinct than they usually are in *atkinsi*.

Note that the innermost of the brown femoral crossbands which are sometimes present must not be mistaken for the femoral spot.

Juvenile specimens of typical *atkinsi* often cannot be distinguished from those of *orientalis*.

Measurements.

	<i>Length Head and Body</i>	<i>Head</i>	<i>Hind Limb</i>	<i>4th Toe</i>
Type No. 22158	43 mm.	16 mm.	64 mm.	14 mm.
Paratypes 22159, 3883, 4073, 22092-8, 22101-3, 22070-4 and two uncatalogued specimens.	43-9 mm.	17-4 mm.	71-13 mm.	16-3 mm.

Remarks. Specimens of *atkinsi* from the following localities in Oriente: Cobre Range, Siboney, Santiago, and Guantanamo, in the Museum of Comparative Zoölogy are rather intermediate between typical *atkinsi* and *orientalis*. They possess the black femoral spot or spots found in *atkinsi* and a dorso-lateral band as in the new race.

ELEUTHERODACTYLUS ALBIPES sp. nov.

Plate 4, figs. 1-2.

Type. M. C. Z. No. 22045, a female, from Turquino Peak, 5400-6000 feet, Oriente, Cuba, collected by P. J. Darlington, June 1936.

Paratypes. M. C. Z. Nos. 22046-9 and twelve uncatalogued specimens with the same data and history as the type; M. C. Z. No. 21960 from near Cueva del Aura, Turquino Peak, 1500-4000 feet, June 1936; M. C. Z. Nos. 22015-8 from Cueva del Aura to "Pico Cuba," Turquino Peak, 3500-5000 feet, June 1936, all collected by Dr. Darlington.

Diagnosis. Allied to *Eleutherodactylus emiliae* from which the new form differs in having the dorso-lateral fold obsolete, and usually in possessing a more sharply defined supra-tympanic fold. Also *albipes* appears to grow slightly larger. This form also differs in coloration.

Description. Tongue suboval, not nicked behind; vomerine teeth in two very long groups, behind the choanae, each group extending about half their length beyond the choanae (in some paratypes vomerine teeth do not extend quite so far beyond choanae as in type; in very young specimens vomerine teeth are invisible); snout obtuse, slightly longer than the diameter of the eye; canthus rostralis distinct and slightly curved; loreal region concave and decidedly oblique; nostril slightly nearer the tip of snout than the eye or about the same distance in some paratypes; interorbital space broader than upper eyelid; tympanum distinct, about two thirds the diameter of the eye or about the same diameter to about one half in the paratypes; the tips of the digits are very feebly swollen or are not swollen at all; first finger is slightly shorter than the second or about the same length in some of the paratypes; the first toe is decidedly shorter than the second; the toes are practically unwebbed at the base. There are two

fairly prominent metatarsal tubercles, the inner the more prominent but they are about equally prominent in the juvenile paratypes. The tibio-tarsal articulation of the adpressed hind limb reaches to the shoulder or between the shoulder and the tympanum in the paratypes; smooth above; sides granular, an indistinct lateral fold, and a distinct supratympanic fold which is rather indistinct in some of the paratypes, perhaps due to the preservation. All are smooth below, and granular on the sides of the belly.

Coloration in alcohol. Above, dark brown, the hind limbs indistinctly crossbanded with darker; femur and hindside of humerus whitish yellow, somewhat washed with brown; feet and hands, both above and below, yellowish white. The outer digits are strongly marked with brown, the inner with less of this brown marking; below, whitish yellow, suffused and spotted with brown, on the suffused areas a few small whitish spots.

Above, the ground color of the paratypes may be either lighter or darker than the type, often grayish in juvenile specimens. The lighter specimens show crossbands on the hind limbs more distinctly than does the type. There is also a dark spot near the groin in many of the paratypes; the whitish-yellow areas on the limbs may be absent; sometimes these are faint, whitish, incomplete dorso-lateral streaks; also sometimes a broad whitish lateral streak; the paratypes generally more strongly suffused and spotted beneath with brown than is the type.

Measurements.

	<i>Length Head and Body</i>	<i>Head</i>	<i>Hing Limb</i>	<i>4th Toe</i>
Type No. 22045	33 mm.	11 mm.	40 mm.	9 mm.
Paratypes 22015-8	24-9 mm.	9-4 mm.	31-11 mm.	7-2 mm.

21960, 22046-9 and twelve uncatalogued specimens.

ELEUTHERODACTYLUS INTERMEDIUS sp. nov.

Plate 4. figs. 3-4.

Type. M. C. Z. No. 21965, a female, from near Cueva del Aura, Turquino Peak, 1500-4000 feet, Oriente, Cuba, collected by P. J. Darlington, June 1936.

Paratypes. M. C. Z. Nos. 21966-74 and four uncatalogued specimens with the same history as the type; M. C. Z. No. 22050 from Turquino Peak, 5400-6000 feet. June 1936; M. C. Z. No. 22157 from the Cobre Range 3000-3800 feet, July 1936; M. C. Z. Nos. 22130-2 from Mountains North of Imias, 3000-4000 feet, July 25-28, 1936. All collected in Oriente, Cuba by P. J. Darlington.

Diagnosis. Allied to *Eleutherodactylus albipes*, but differing in the shape and position of the vomerine teeth and in coloration. This new species appears decidedly smaller than *albipes*.

Description. Vomerine teeth in two rather long groups behind the choanae, reaching to about the level of the outer edges of the choanae or not quite so far as usual; the vomerine teeth are absent in some of the juvenile paratypes. There are a few small warts on the back and these are absent in some paratypes also. Otherwise this frog is essentially similar to *albipes*, the preceding species. Note, however, the very different coloration.

Coloration in alcohol. Above, light gray, mottled with brown and darker gray; an indistinct brown crossband between the eyes; a black band from tip of snout to eye extending along the canthus rostralis; another black band extending from eye along the supratympanic fold; limbs crossbanded with darker; a white line on rear of femur; below, dark brown, densely covered with irregularly shaped white or yellowish white spots; along the middle of the belly the spots tend to arrange themselves to form a broken line.

In coloration the paratypes are very variable. Above, the ground color ranges from being like that of type to very dark brown or black, in some cases variously marked or mottled with darker. The canthal band may be poorly defined or absent; the supratympanic band is sometimes also ill defined. Some paratypes have a broad dark brown lateral streak extending from eye to hind limb. The crossbands on limbs scarcely evident in some species. There are sometimes narrow whitish dorso-lateral streaks or a narrow whitish vertebral line, any of which may be incomplete, indistinct or absent. The anterior portion of the dorsal line is often bordered with brown. The light femoral streak may also be incomplete, indistinct, or absent. There is a black spot present near the groin in a few specimens and on the bellies white spots either more or less numerous than in type, may produce in places the effect of heavy brown markings on a white ground color. The ventral median white line, sometimes continuous, may appear beneath the head and chest as well as the belly but it may also be ill-defined or absent.

Measurements.

	<i>Length Head and Body</i>	<i>Head</i>	<i>Hind Limb</i>	<i>4th Toe</i>
Type No. 21965	19 mm.	7 mm.	22 mm.	5 mm.
Paratypes 22050	20-9 mm.	8-3 mm.	25-13 mm.	5-2 mm.

22157, 22130-2, 21966-74 and four uncatalogued specimens.

ELEUTHERODACTYLUS PARVUS sp. nov.

Plate 2, figs. 3-4

Type. M. C. Z. No. 21947, a female, from Cueva del Aura, Turquino Peak, circa 3500 feet, Oriente, Cuba, collected by P. J. Darlington, June 1936.

Paratypes. M. C. Z. Nos. 21948-56 and six uncatalogued specimens with the same data as the type; M. C. Z. Nos. 21957-9 from near Cueva del Aura, Turquino Peak, 1500-4000 feet, Oriente, Cuba, collected by P. J. Darlington, June 1936.

Diagnosis. Similar to the preceding species from which it differs in the shape of the head, the shape and position of the vomerine teeth and in coloration; also, it is decidedly smaller. It may be allied also to *Eleutherodactylus varleyi* from which it differs in the shape and position of the vomerine teeth, in having decidedly shorter digits, and in being less warty above. All differ decidedly in coloration.

Description. Vomerine teeth in two rather short groups well behind the choanae, extending to about the level of the inner edges of the choanae (vomerine teeth not definable in some paratypes); loreal region almost vertical; tympanum about two thirds the diameter of the eye or only a bit more than one half to nearly as large in the paratypes; the tibiotarsal articulation of the adpressed hind limb reaches to the posterior border of the eye. It reaches from the tympanum to the posterior border of eye in the series of paratypes. All are slightly warty above; there is no lateral fold; otherwise this form is very similar to *E. albipes* described above.

Coloration in alcohol. Above, brown, hind limbs crossbanded with very dark brown; a whitish vertebral line on the dorsum connecting up with two other whitish lines each one extending across the rear of the femur; also a broad vertebral dark brown spot, irregular in outline, extending from about a level with the insertion of the fore limbs to the hind limbs; a broad crossband of the same color between and behind the eyes; a very dark brown or black spot on each side near the groin; a very dark brown, broad lateral streak extending from the tip of the snout to the hind limb, bending downward posteriorly; beneath, whitish, chest, throat, and underside of lower jaw powdered with brown; sides of belly very dark brown, this color being a continuation of the lateral streaks; middle or whitish portion of belly spotted with dark brown; under side of femur dark brown minutely spotted with whitish.

Above, in some of the paratypes, the ground color may be quite

dark so that the markings are less distinct; crossbands of hind limbs sometimes lighter colored than in type; dark vertebral spot very variable in shape and size, sometimes merging with the crossband between the eyes and sometimes entirely absent; crossband between the eyes often absent or indistinct; dorsal and femoral white lines may be absent or indistinct; below, the specimens may be colored as described for the type or the whitish areas may be very little marked with brown or else so heavily marked that the whitish regions are almost completely obscured. Occasionally the underside of the femur is marked with large whitish patches.

Measurements.

	<i>Length Head and Body</i>	<i>Head</i>	<i>Hind Limb</i>	<i>4th Toe</i>
Type No. 21947	13 mm.	6 mm.	18 mm.	4 mm.
Paratypes 21957-9	14-9 mm.	5-4 mm.	19-14 mm.	4-2 mm.
21948-56 and six uncatalogued specimens.				